



Next Club Meeting Sunday 13th October Belviour Guides Hall 6 Silva Drive West Wodonga

Meetings commence with a BBQ (with a donation tin for meat) at 12pm with meeting afterwards
Members are encouraged to turn up a little earlier for clubroom maintenance
Call in Via VK3RWO, 146.975, 123 Hz tone



A U.S. Postage Stamp from 1964, commemorating amateur radio

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The Fatal Current

Strange as it may seem, most fatal electric shocks happen to people who should know better. Here are some electro-medical facts that should make you think twice before taking that last chance.

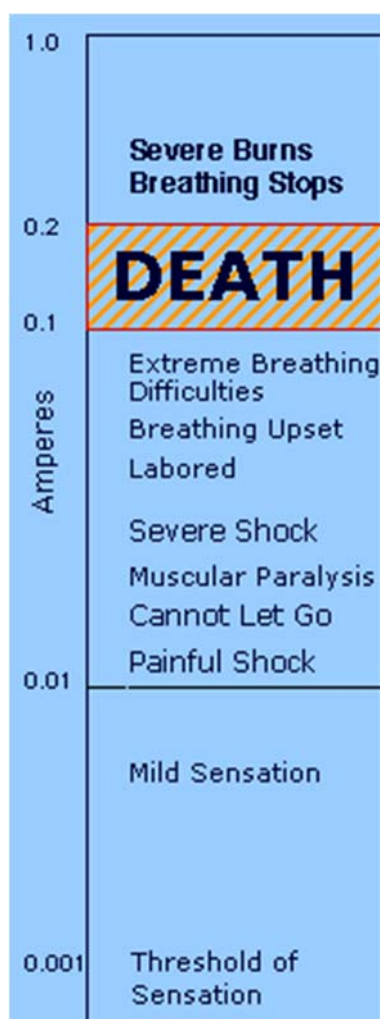
It's the Current That Kills

Offhand it would seem that a shock of 10,000 volts would be more deadly than 100 volts. But this is not so! Individuals have been electrocuted by appliances using ordinary house currents of 240 volts and by electrical apparatus in industry using as little as 42 volts direct current. The real measure of shock's intensity lies in the amount of current (amperes) forced through the body, and not the voltage. Any electrical device used on a house wiring circuit can, under certain conditions, transmit a fatal current.

While any amount of current over 10 milliamps (0.01 amp) is capable of producing painful to severe shock, currents between 100 and 200 mA (0.1 to 0.2 amp) are lethal. Currents above 200 milliamps (0.2 amp), while producing severe burns and unconsciousness, do not usually cause death if the victim is given immediate attention. Resuscitation, consisting of artificial respiration, will usually revive the victim.

From a practical viewpoint, after a person is knocked out by an electrical shock it is impossible to tell how much current has passed through the vital organs of his body. Artificial respiration must be applied immediately if breathing has stopped.

The Physiological Effects of Electric Shock



The chart shows the physiological effects of various currents.

Note that voltage is not a consideration.

Although it takes voltage to make current flow, the amount of shock-current will vary, depending on the body resistance between the points of contact.

As shown in the chart, shock is relatively more severe as the current rises.

For currents above 10 milliamps, muscular contractions are so strong that the victim cannot let go of the wire that is shocking him.

At values as low as 20 milliamps, breathing becomes labored, finally ceasing completely even at values below 75 milliamps.

As the current approaches 100 milliamps, ventricular fibrillation of the heart occurs - an uncoordinated twitching of the walls of the heart's ventricles which results in death.

Above 200 milliamps, the muscular contractions are so severe that the heart is forcibly clamped during the shock.

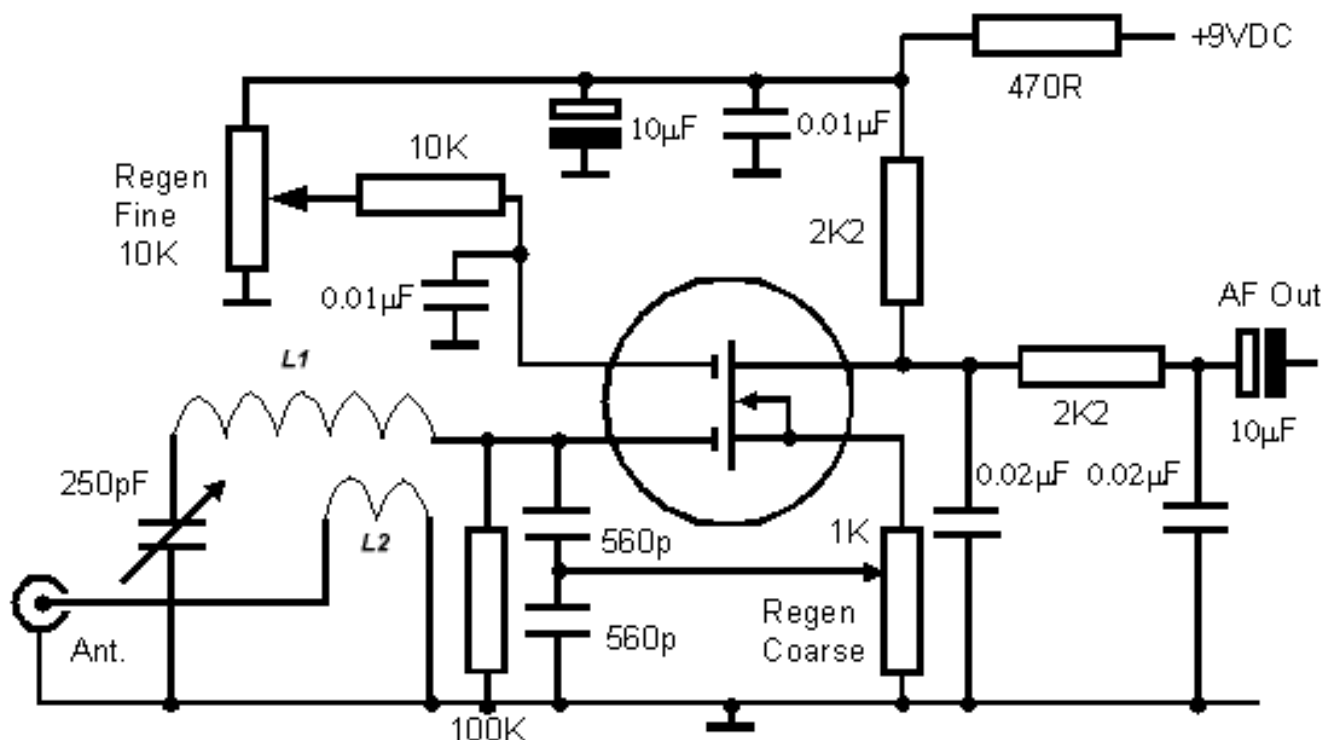
This clamping protects the heart from going into ventricular fibrillation, and the victim's chances for survival are good.

Danger - Low Voltage

It is common knowledge that victims of high-voltage shock usually respond to artificial respiration more readily than the victims of low-voltage shock. The reason may be the merciful clamping of the heart, owing to the high current densities associated with high voltages. However, lest these details be misinterpreted, the only reasonable conclusion that can be drawn is that 75 volts are just as lethal as 750 volts.

The actual resistance of the body varies depending upon the points of contact and the skin condition (moist or dry). Between the ears, for example, the internal resistance (less the skin resistance) is only 100 ohms, while from hand to foot is closer to 500 ohms. The skin resistance may vary from 1000 ohms for wet skin to over 500,000 ohms for dry skin.

REGENERATIVE T.R.F. RECEIVER



As most people have access to a computer, use a computer sound card as the A.F. amplifier for a simple TRF receiver.

This single transistor regenerative TRF (tuned radio frequency) receiver can receive SSB, CW, and AM. The transistor is a VHF dual gate MosFET.

This uses a 3SK45 but a 40673, 3N201, 3SK88, BF961, BF981, or any similar device should be suitable.

For L1 I use 30 turns of insulated wire, wound on a half inch diameter plastic tube.

The aerial coupling coil L2 is 5 turns wound over L1.

With this inductor it tunes from 3.5 MHz to about 7MHz. Use more turns for lower frequencies, less turns for higher frequencies.

For frequencies above 15MHz, use 220pF capacitors in place of the 560pF capacitors. The A.F. output from the receiver is connected to the Mic. input of the computer.

To receive AM, set the fine Regen (Reaction) control to about half way, set the coarse Regen control to slightly below the point of oscillation. Tune in the AM station with the main tuning control. To receive SSB or CW, set the coarse Regen control to just above the point where oscillation begins. Tune in the SSB/CW station with the main tuning control. There is a lot of interaction between the three controls.

Very strong SSB signals cause some frequency variation on voice peaks.

CW and AM reception is very good.

The selectivity is surprisingly good, for a receiver with only one tuned circuit.

Use a 9 Volt battery (6F22 or PP3) as the power supply.

If you use a mains supply, make sure that is well smoothed and regulated.

DO NOT connect a high current supply to your computer mic input.

When receiving SSB or CW, some of the oscillator signal will be radiated by the antenna.

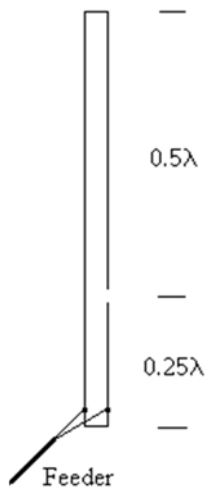
In the valve (tube) era, regenerative receivers were notorious for causing interference.

This is not likely to be a problem with this low power circuit.

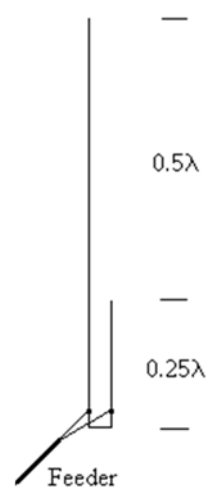
The radiated power should be less than 1 mW.

~EI9GQ HOME BREW RADIO PAGE

J-VERTICAL FOR 10 METRES



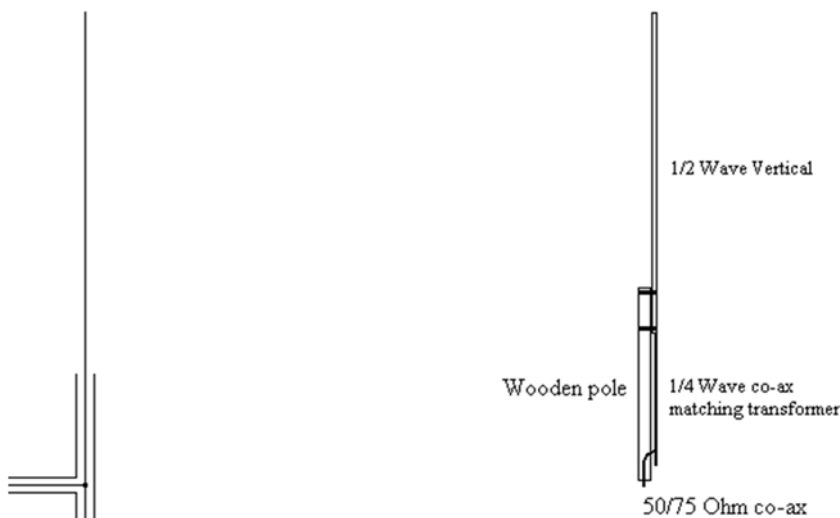
SLIM JIM



J VERTICAL

When I built my first 10 metre transceiver, I decided to make a Slim Jim for 10M. The 2M Slim Jim was made from Aluminium tubing. I soon realised that it would be quite difficult to make a 10M version.

I abandoned the idea of using a folded half wave vertical, like the Slim Jim. I used a half wave vertical section made from three different sizes of Aluminium tubing. The quarter wave matching section was made from co-axial cable. I used 75 Ohm TV co-ax, for both the feeder and the matching transformer. To calculate the correct length of the 1/4 wave matching section, the velocity factor of the co-ax cable must be known. The well-known formula for converting frequency to wavelength is $300/F$ in MHz = Wavelength in metres. The free space wavelength at 28.500MHz is $300/28.500 = 10.526$ Mtrs. One quarter wave = 2.631Mtrs. This must be multiplied by the velocity factor of the co-ax, 0.8 for the low-loss 75 Ohm TV co-ax that I used, giving a length of 2.105Mtrs (6ft 11.5in.) I used a 7ft length of co-ax with the feeder tapped in at 1ft from the bottom (see drawing.) If you use standard 50 Ohm co-ax like RG8, RG58, RG213, the velocity factor will probably be much lower (about 0.66.)



J VERTICAL WITH CO-AXIAL MATCHING SECTION J VERTICAL USED AT EI9GQ

The original Aluminium J-vertical was dismantled when I moved QTH in 1996. I recently built a new one from fibreglass, (Thanks to John EI7BA for the very nice tapered fibreglass pole.) I ran a length of insulated wire through the fibreglass tube, for the 1/2 wave vertical. Design information below. Frequency 28.8 MHz Wire length = 16Ft 3In

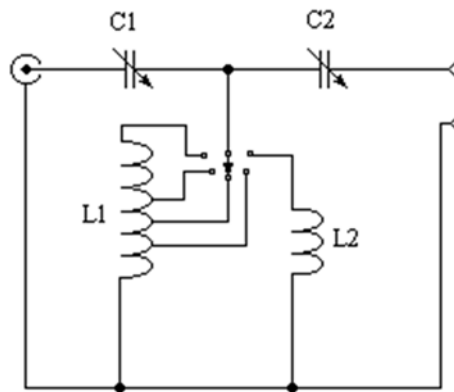
Matching section = 5Ft 8In of RG213 coax. VF 0.66, short circuit at bottom, feeder tap at 9inches in from the bottom.

The fibreglass pole is fixed to the wooden support with vinyl tape. Don't be mean with the tape. If you tape it up well, it will be strong enough to withstand the winter storms. My original J Vertical survived the 110 MPH winds in Feb. 1987. I cut the cable and soldered the feeder in at 9In from the bottom. A much neater method would be to use three PL259 plugs and a T connector. Take care to waterproof the connections. At the top of the quarter wave transformer, where the half wave wire is connected to the coax, I put some PVC tubing over the end of the co-ax, the PVC tubing was filled with Silicon grease.

Despite the fact that I used 75 Ohm low-loss satellite TV co-ax as the feeder, the SWR is 1.1 : 1 at 28.6 MHz and less than 1.5 : 1 from 28.3 to 29 MHz

~EI9GQ HOME BREW RADIO PAGE

T-MATCH ATU



C1 250pF or more

C2 250pF or more

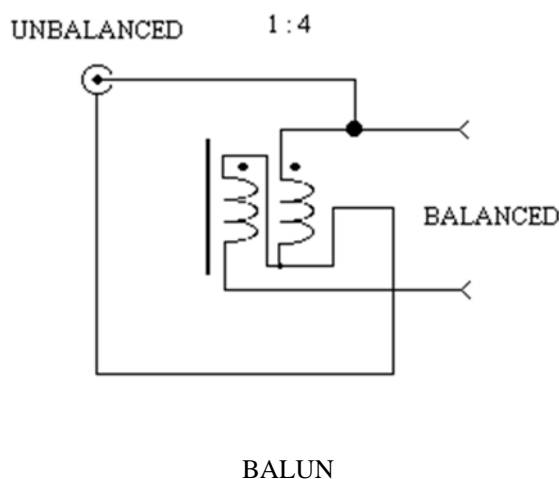
L1 31 mH 39 turns, 2 Inches (51mm) Diameter, 4 Inches (102mm) long.

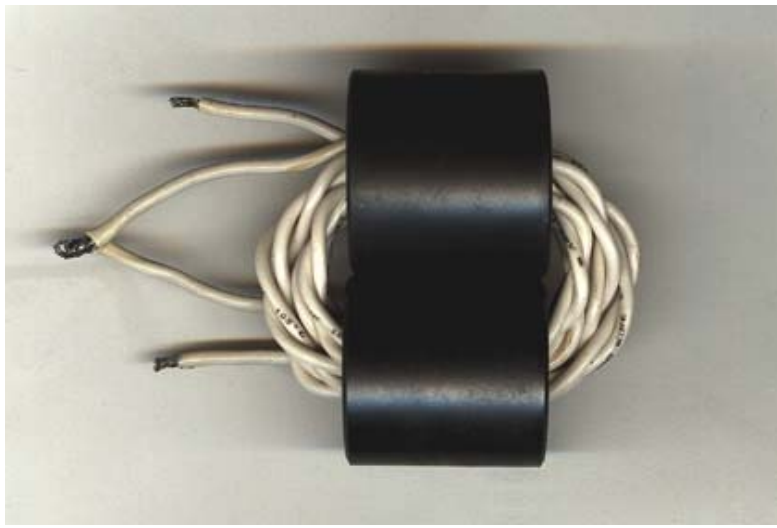
Tapped at 20T, 14T, 9T, 5T

L2 0.25 mH 4 turns 1.2 Inches (30.5mm) Diameter, 2 Inches long.

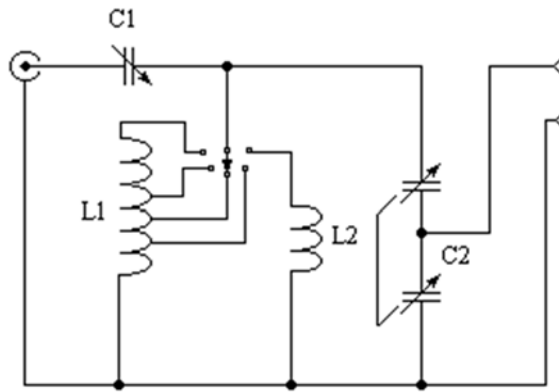
I used silver plated copper wire for L1 and L2. If you use enamelled copper wire, remove the insulation on one side of the coil, so that you can easily change the number of turns used for each band. If you don't need to cover 160 Metres, L1 can be reduced to about 25 turns. L2 is only used on 10 Metres.

To use this tuner with a balanced feedline, you will need to use a balun. My first attempt at making a balun for this ATU was a complete failure. I used some ferrite cores from the junk-box. The balun got very hot with just 100W of RF. The second attempt was even worse. Finally I used a pair of RFI suppression cores 1.25 In. (32mm) long, 1 In.(25mm) Dia. with a 0.5 Inch (12.7mm) hole through the centre. The balun runs cold at 100W and slightly warm after several minutes of key-down at 250W. A stack of Amidon type 43 or type 61 ferrite cores should be suitable. Use a bi-filar winding with as many turns as you can fit through the holes. I used 9 turns of two lengths of plastic covered wire, twisted tightly together.

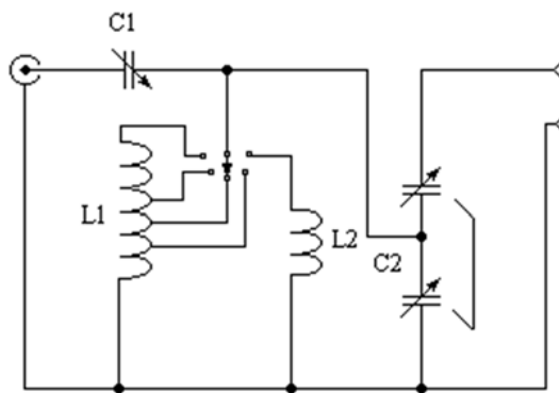




If a dual gang variable capacitor is used for C2, the circuit can easily be changed to a "Transmatch" or "SPC Transmatch".



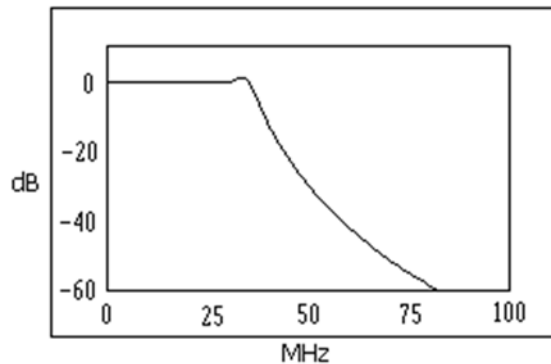
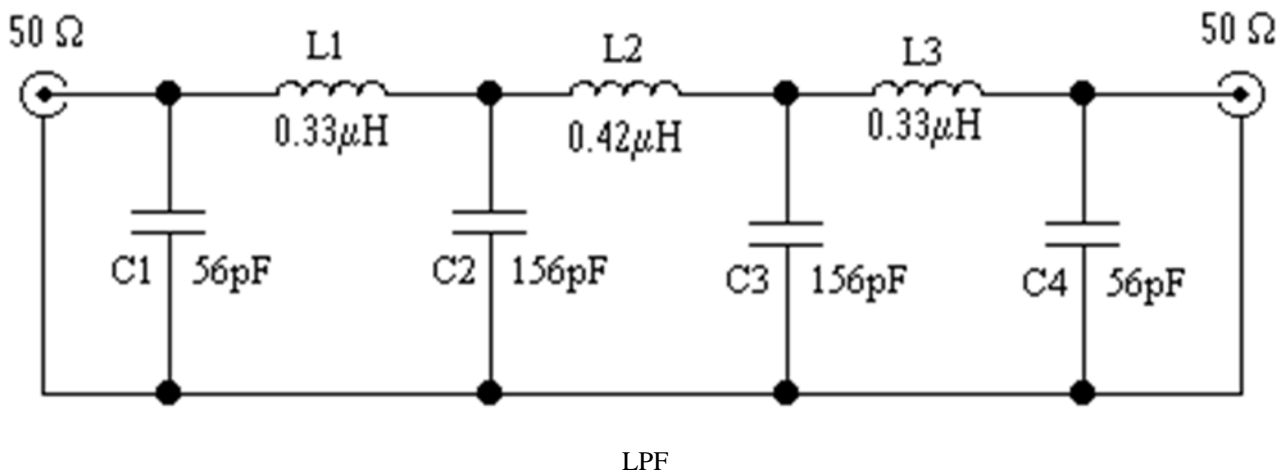
'Ultimate Transmatch'



SPC Transmatch

LOW PASS FILTER

This simple 7 element, Chebyshev low pass filter, rolls off at 30MHz.
Attenuation is better than -40dB at 60MHz, -65dB at 90MHz, -80dB at 120MHz.



FREQUENCY RESPONSE PLOT

The filter is housed in a box made from double-sided PCB. The input/output connectors are SO239 sockets. The usual, single hole mounting type tends to twist when unscrewing the PL259 plug. Try to find some bolt mounting sockets. The air-core inductors were wound from 1mm diameter copper wire, stripped from some 75 Ohm tv co-axial cable, details below:

L1, L3 6.25 Turns, 0.5in (12.75mm) inside diameter, 0.5in (12.75mm) coil length.

L2 8 Turns, 0.5in (12.75mm) inside diameter, 0.73in (18.25mm) coil length.

C1, C4 56pF Silver Mica.

C2, C3 100pF in parallel with 56pF Silver Mica.

The capacitors should be rated for several hundred volts. I didn't try it, but you may be able to make the capacitors from double-sided PCB.

When the filter is assembled, you can fine-tune the inductor values by adjusting the turn spacing.

Use your transmitter, SWR meter and a 50 Ohm dummy load.

When the filter is aligned correctly, you should have a low SWR on all bands.

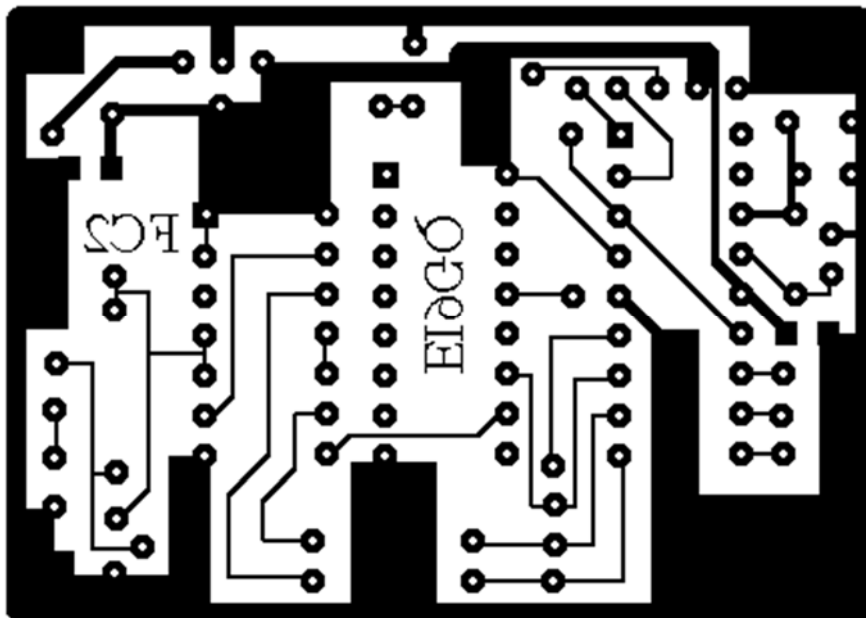
This filter should have a maximum SWR of about 1.1 : 1 , I couldn't get it as low as this, on all bands.

3.75 MHz 1.25 : 1
7.05 MHz 1.15 : 1
14.2 MHz 1.10 : 1
18.1 MHz 1.10 : 1
21.3 MHz 1.15 : 1
28.8 MHz 1.25 : 1

MAKE YOUR OWN PRINTED CIRCUITS

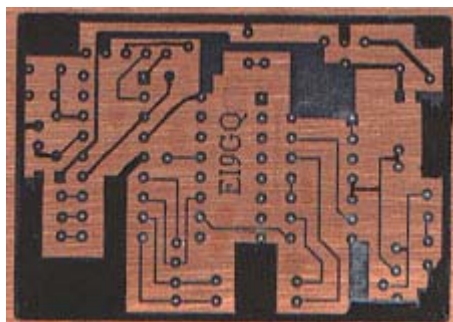
To make smart looking PCB's, all you need is: A computer, a laser printer, copper clad board, etchant, a clothes iron and some Epson glossy photo paper. You can buy special film for making PCB's, but I have found that the Epson paper gives better results. I use Epson photo quality glossy paper for inkjet printers.

Draw the PCB track layout, using a CAD program or a standard drawing program. Remember to reverse the image before printing. Most drawing programs have a 'flip horizontal' function. Print the image on normal A4 paper to make sure that it is the correct size. Check the layout carefully.



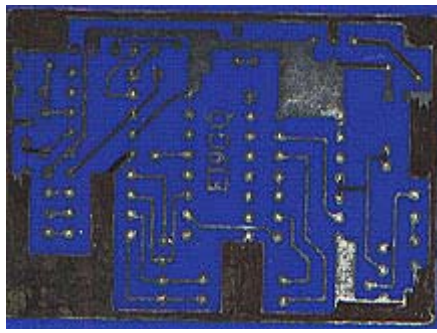
PCB LAYOUT

Use a laser printer to print the image on the glossy side of the photo paper. Clean the copper clad board with steel wool or very fine wet sandpaper. Dry the board thoroughly. Make sure that the board is clean and free from fingerprints. Place the photo paper face down on the copper clad board. Use masking tape to hold the paper in position. Don't use vinyl tape. Place the board on a flat surface. You will be using a very hot iron, so don't use the dining room table. I use the back of an old telephone directory. Use a hot clothes iron to transfer the track pattern from the paper to the copper board. Don't be afraid to use lots of heat and pressure. Allow the board to cool. Don't be tempted to lift the paper. Put the board in a container full of warm soapy water. After about twenty minutes the paper will begin to dissolve and disintegrate. Carefully remove the paper from the copper board. Rinse under a cold tap to remove paper residue. You may need to touch up any broken tracks with an etch resist pen. I use a fine Staedtler laundry marker.

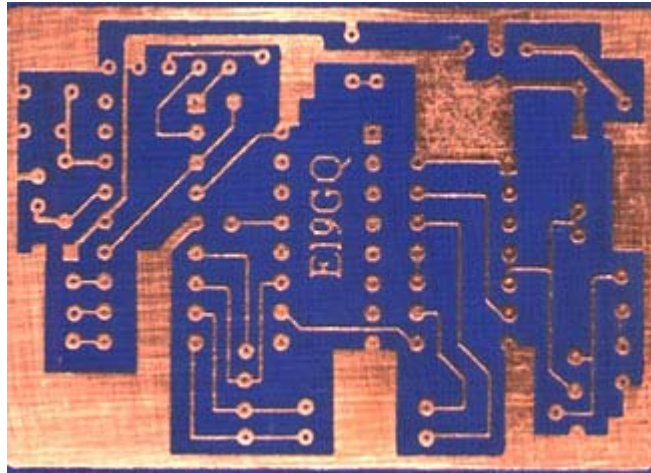


BEFORE ETCHING

Etch the board in a Ferric Chloride etching solution. You can buy the etchant in liquid form or as anhydrous Ferric Chloride powder. Follow the instructions. NEVER add water to dry Ferric Chloride. Don't get any on your clothes.

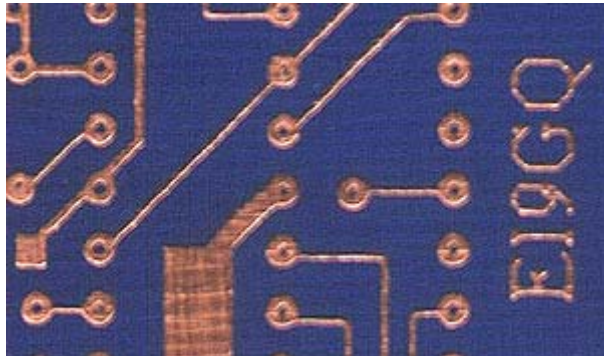


AFTER ETCHING



PCB

After etching, rinse the board under a cold tap. Remove the etch resist with some steel wool. Dry the board. Use a 0.8 or 1.0 mm drill to make the holes for component leads.



CLOSE UP

The close up picture shows that the tracks are not as clear and well defined as they would be if the board was produced by photographic methods. The procedure for making double sided boards is a bit tedious. Coat one side of the board with aerosol paint or clear lacquer. Etch the other side of the board as for a single sided board. Remove the paint or lacquer. Drill the component lead holes. Paint the etched side of the board. Then etch the unetched side of the board as for a single sided board. It is difficult to line up the two sides correctly. Use the component holes as a guide.

I have used this method to make PCB's for both DIL and surface mount IC's with 0.05 Inch pin spacing. My laser printer is an old Apple LaserWriter II NTX (300dpi.) If you don't have access to a laser printer, use an inkjet printer to print the layout on ordinary paper, then copy the image to the Epson paper, using a photo copier. I haven't tried this method but it should work.

~EI9GQ HOME BREW RADIO PAGE

Mini Black Widow Up & Outter Antenna



These LDG RU-4:1 200 Watt UNUNs were designed to allow for an easy interface of 43 ft., non-resonant vertical antennas to antenna tuners via 50-ohm coaxial cable. These 200 watt peak-power UNUNs also allow for the easy matching of resonant verticals--in many cases, without the use of an antenna tuner! They may also be used with many of your antenna projects where a 4:1 match is needed.

I needed an antenna that would quickly setup and work on multiple bands with my Elecraft KX2. I already have my Black Widow Vertical Antenna so I thought I would modify it. My plan is to make my [Mini BW Antenna](#) in to an Up & Outter. If you would like to know more about how an Up and Outter Antenna works, click [here](#). I'm using a pole that's only 14.5 feet high so the horizontal element will be around 38 feet or so. This most likely will give me a larger take-off angle or

more close in contacts.

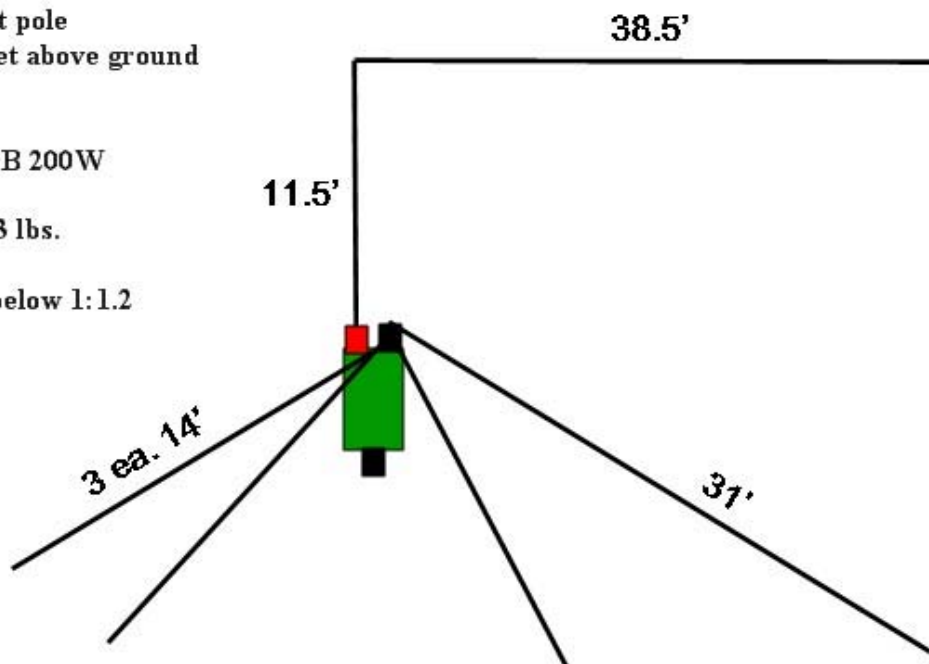
My [Elecraft KX2 Tranceiver](#) already has a nice antenna tuner in it so I'll use this internal tuner. This way I save lugging around a tuner! This antenna can be used with any rig that has an internal or external antenna tuner from QRP to 100W. The entire antenna including pole and support system weighs in at only 1.3 pounds!

I just tried out the antenna today (9/3/2017) and the thing works fantastic! I ran three 14-foot counterpoise wires out and one 31-foot wire out. Using my Elecraft KX2, this thing tunes great on all bands from 80m to 10m!

I then tuned around on 40m and worked W2BPI in NY from PA 579. I then listened on 20m and snagged UT5UJO from the Ukraine and he gave me a 579! All this while running QRP.

BW Mini Up & Outter Antenna

- * Antenna support - 14.5 foot pole
- * LDG 4:1 Unun placed 3-feet above ground
- * Antenna needs tuner
- * Tunes 80m - 10m
- * Max Power: CW 100w, SSB 200W
- * Wire size ~ 24 gauge
- * Total weight with pole ~ 1.3 lbs.
- * used with KX2- SWRs all below 1:1.2



First thing I did was to cut a 50-foot piece of wire for the up and out radiator wire. I copied [WB3GCK's setup](#) at our MOC Meeting place. He later used a fifty-foot radiator wire. I already had three fourteen foot conterpoise wires. So, I made a 31-foot wire for 80m.

~<http://wa3wsj.homestead.com>

DEFINING THE DIFFERENCE BETWEEN “COMPLETE” & “FINISHED”

No dictionary has ever been able to satisfactorily define the difference between "complete" and "finished."

However, during a recent linguistic conference, held in London, England, and attended by some of the best linguists in the world.

Samsundar Balgobin, a Guyanese linguist, was the presenter when he was asked to make that very distinction.

The question put to him by a colleague in the erudite audience was this: “Some say there is no difference between complete and finished.

Please explain the difference in a way that is easy to understand”.

Mr. Balgobin’s response:

“When you marry the right woman, you are complete. If you marry the wrong woman, you are finished. And, if the right one catches you with the wrong one, you are completely finished.”

His answer received a five minute standing ovation.

HOW TO PROPERLY PLACE NEW EMPLOYEES

1. Put 400 bricks in a closed room.
2. Put your new hires in the room and close the door.
3. Leave them alone and come back after 6 hours. Then analyse the situation:
 - a. If they are counting the bricks, put them in the Accounting Department.
 - b. If they are recounting them, put them in Auditing.
 - c. If they have messed up the whole place with the bricks, put them in Engineering.
 - d. If they are arranging the bricks in some strange order, put them in Planning.
 - e. If they are throwing the bricks at each other, put them in operations.
 - f. If they are sleeping, put them in Security.
 - g. If they have broken the bricks into pieces, put them in Information Technology.
 - h. If they are sitting idle, put them in Human Resources.
 - i. If they say they have tried different combinations, they are looking for more, yet not a brick has been moved, put them in Sales.
 - j. If they have already left for the day, put them in Management.
 - k. If they are staring out of the window, put them in Strategic Planning.
 - l. If they are talking to each other, and not a single brick has been moved, congratulate them and put them in Upper Management.

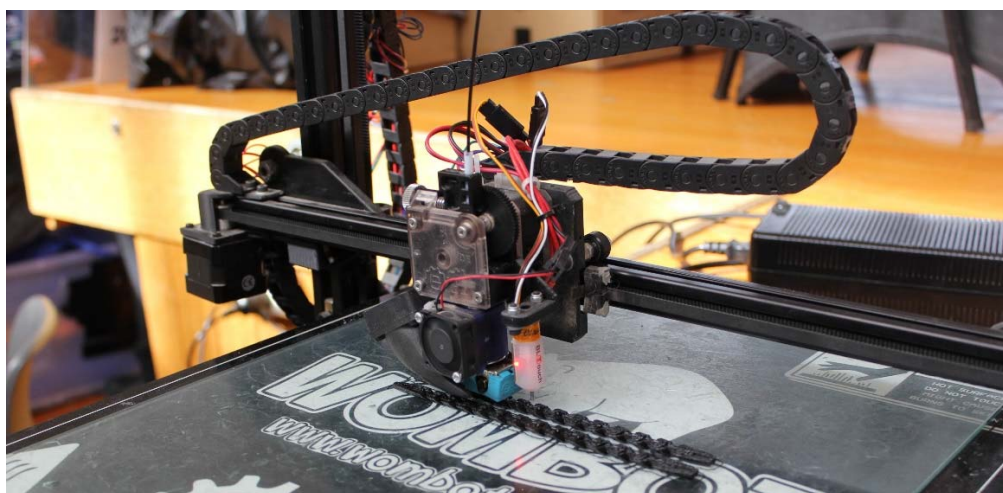
~Internet

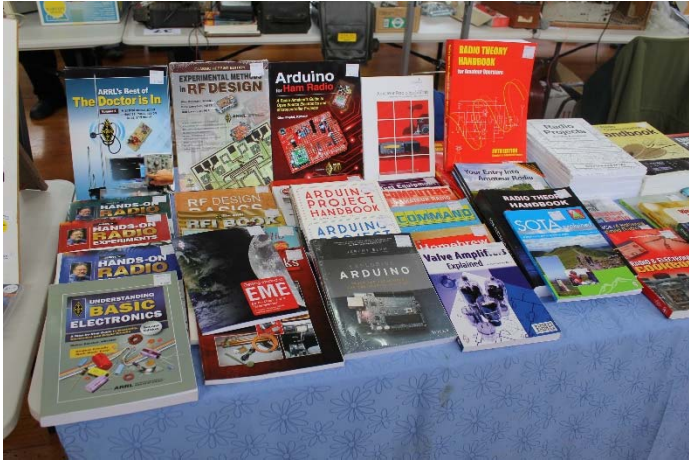
Shepparton Hamfest Report

As it was not too far down the road, I booked some tables at Shepparton Hamfest. Most of the usual crew were selling, most were busy, with a few really busy, but with really cheap prices. Attendance numbers seemed a bit down, but those that came had lots to choose from, some good deals and stuff was old junk. As I was bust selling I only got a short time to wander around. I saw a few faces I knew, but not many from Melbourne, despite the good weather on the day. With the road now 110km nearly all the way, the drive is quite easy from the city.

I asked some local traders where the best place for lunch was, some said The Australia Hotel. Well they were right, massive chicken parmigiana and salad and chips, only \$15, on a Sunday.

The pictures tell the rest of the story...





~Mick VK3CH



Southern Peninsula Amateur Radio Club Hamfest

Sunday 17th November 2019

**Eastbourne Primary School Auditorium
Allambi Avenue, Rosebud**

(Mel. 169 K5, follow signs from Boneo Rd.)

Located on Victoria's beautiful Mornington Peninsula

Talk in on VK3RSP (146.675) from 8 AM

FEATURING:

Technical forums

Traders - Pre-Loved Gear Sales, Components, Antennae

Great Door Prizes - Ham Radio Vehicles

Demonstrations

- Talk-in from 8:00 am

Emergency Services Comms Display

Free Tables available for Club Promotions

RadioFest is Fully Catered and Undercover

Food Sales, Show & Tell, Pre-Entry Tickets from 8:00 am,

Main Doors open 9:30 am

Entry \$6.00

Children under 12 admitted free

NEVARC Nets



40M Net

Monday, Wednesday and Fridays
10am Local time (East coast)

7.095 MHz LSB

Approximately + or - QRM

Hosted by Ron VK3 AHR

80M Net

Wednesday 20:30 Local time

3.622 MHz LSB

Hosted by Ron VK3 AHR

Using the club call VK3ANE

2M Nets

Monday at 2000 local time on
VK3RWO repeater
146.975 MHz

President, VK2VU, Gary
Vice President, Tom VK3NXT
Secretary, VK2FKLR, Kathleen
Treasurer, Amy



NEVARC CLUB PROFILE

History

The North East Victoria Amateur Radio Club (NEVARC) formed in 2014.
As of the 7th August 2014, Incorporated, Registered Incorporation number A0061589C.
NEVARC is an affiliated club of the Wireless Institute of Australia.

Meetings

Meetings details are on the club website, the Second Sunday of every month, check for latest scheduled details.
Meetings held at the Belviour Guides Hall, 6 Silva Drive West Wodonga.
Meetings commence with a BBQ (with a donation tin for meat) at 12pm with meeting afterwards.
Members are encouraged to turn up a little earlier for clubroom maintenance.
Call in Via VK3RWO, 146.975, 123 Hz tone.

VK3ANE NETS

HF

7.095 MHz Monday, Wednesday, Friday - 10am Local time
3.622 MHz Wednesday - 8.30pm Local time

VHF

VK3RWO Repeater 146.975 MHz – Monday - 8pm Local time
All nets are hosted by Ron Hanel VK3AHR using the club callsign VK3ANE

Benefits

To provide the opportunity for Amateur Radio Operators and Short Wave Listeners to enhance their hobby through interaction with other Amateur Radio Operators and Short Wave Listeners. Free technology and related presentations, sponsored construction activities, discounted (and sometimes free) equipment, network of likeminded radio and electronics enthusiasts. Excellent club facilities and environment, ample car parking.

Website: www.nevarc.org.au

Postal:

NEVARC Secretary
PO Box 69
Wahgunyah Vic 3683

Facebook: www.facebook.com/nevicARC/

All editors' comments and other opinions in submitted articles may not always represent the opinions of the committee or the members of NEVARC, but published in spirit, to promote interest and active discussion on club activities and the promotion of Amateur Radio. Contributions to NEVARC News are always welcome from members.

Email attachments of Word™, Plain Text, Excel™, PDF™ and JPG are all acceptable.

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Please include a stamped self-addressed envelope if you require your submission notes returned.

Email attachments not to exceed 5 Mb in file size. If you have more than 5 Mb, then send it split, in several emails to us.

Attachments of (or thought to be) executable code or virulently affected emails will not be opened.

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Other articles credited to outside sources should ask for their permission if they are used.

While we strive to be accurate, no responsibility taken for errors, omissions, or other perceived deficiencies, in respect of information contained in technical or other articles.

Any dates, times and locations given for upcoming events please check with a reliable source closer to the event.

This is particularly true for pre-planned outdoor activities affected by adverse weather etc.

The club website <http://nevarc.org.au> has current information on planned events and scheduled meeting dates.

You can get the WIA News sent to your inbox each week by simply clicking a link and entering your email address found at www.wia.org.au The links for either text email or MP3 voice files are there as well as Podcasts and Twitter. This WIA service is FREE.